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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/671,465	09/29/2003	Alex S. Goldenberg	IMMR-0091B	7950

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EXAMINER	
MOON, SEOKYUN	
ART UNIT	PAPER NUMBER
2629	

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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/671,465	GOLDENBERG ET AL.	
	Examiner	Art Unit	
	Seokyun Moon	2629	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *19 April 2007*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1,3,5-23 and 29-32* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☒ Claim(s) *1,3,5-15 and 32* is/are allowed.

6)☒ Claim(s) *16-23 and 29-31* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *19 April 2007* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Remark

1. In the previous rejection, the Examiner allowed claims 1, 3, and 5-23 and rejected claims 29-32. However, in this correspondence, the Examiner allows claims 1, 3, 5-15, and 32 and rejects claims 16-23 and 29-31 in view of the new ground of rejection. Since the Examiner indicated claims 16-23 as allowable subject matters in the previous rejection but rejects the claims in this correspondence, this Action is made **non-final**.

Information Disclosure Statement

2. The Applicants have submitted two IDSs for this Application and the IDSs disclose a plurality of non-patent literature documents. Examiner respectfully requests the Applicants to submit the copies of the non-patent literature documents listed on the IDSs.

Claim Rejections - 35 USC § 102

3. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

4. **Claims 29-31** are rejected under 35 U.S.C. 102(e) as being anticipated by Ogata (US 6,171,191).

As to **claim 29**, Ogata teaches a method, comprising:

receiving a command (one of the "*command signals*") [col. 15 line 66 – col. 16 line 3] associated with a kinesthetic haptic effect (the rotation of the "*rotor 111*" within the "*vibrating motor 101*") [fig. 20],

the kinesthetic haptic effect being associated with kinesthetic forces (as the "*rotor 111*" rotates, a rotational force is produced); and

mapping the kinesthetic haptic effect to a vibrotactile haptic effect (as the "*rotor 111*" is run in rotation in the offset state, vibrations are produced) [col. 13 lines 29-35], the vibrotactile haptic effect associated with a vibrotactile force to be output to a vibrotactile interface device ("*actuating device 1*"), the vibrotactile interface device configured to output the vibrotactile force by rotating a mass ("*rotor 111*") about a shaft ("*drive shaft 109*") [col. 13 lines 29-35], wherein the kinesthetic haptic effect is a non-periodic effect (as the "*rotor 111*" starts to rotate, the angular velocity of the rotation of the "*rotor 111*" starts to increase from 0 to a certain value non-linearly, which indicates that the position of the "*rotor* 111" in the rotation path is changed non-periodically during the time period that the speed of the rotation of the "*rotor* 111" increases), the vibrotactile haptic effect having its own magnitude, the magnitude of the vibrotactile effect being based on a magnitude of the kinesthetic haptic effect (as the angular velocity of the rotation of the "*rotor 111*" increases, the rotational force generated by the "*rotor* 111" increases, and thus the "*actuating device 1*" vibrates more).

As to **claim 30**, Ogata teaches a method, comprising:

receiving a command ("*motor driving control signal*") associated with a kinesthetic haptic effect (rotating the motor and thus causing the motor being brought into contact with the peripheral wall) [col. 16 lines 24-30], the kinesthetic haptic effect being associated with kinesthetic forces (the impact-force applied on the elastic sheet as the motor is brought into contact with the peripheral wall); and

mapping the kinesthetic effect to a vibrotactile haptic effect (by rotating the motor, the motor is brought into contact with the peripheral wall, and thus vibrations are generated), the vibrotactile haptic effect associated with vibrotactile forces to be output to a vibrotactile interface device [figs. 1 and 22], the vibrotactile interface device configured to output the vibrotactile force by rotating a mass ("*rotor 111*") about a shaft ("*driving shaft 109*") [fig. 20], wherein the kinesthetic haptic effect is a spring effect (as the

impact-force is applied on the elastic sheet, the elastic sheet exerts elastic force in a direction opposite to the direction the movement), the vibrotactile effect is output as a vibration if the spring effect has a magnitude above a predetermined threshold (when the impact-force is sufficient enough, i.e. is greater than a certain threshold value, the device-user feels the vibration).

As to **claim 31**, all of the claim limitations have already been discussed with respect to the rejection of claim 29 except for the kinesthetic haptic effect being a damper effect and the vibrotactile effect being output having a desired frequency.

Ogata teaches the kinesthetic haptic effect being a damper effect [col. 13 lines 50-57].

Ogata inherently teaches the vibrotactile effect being output having a desired frequency since the frequency of the vibration of the "*actuator 1*" is determined and implemented in the controller of the "*actuator 1*" when the "*actuator 1*" designed and built.

Claim Rejections - 35 USC § 103

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

6. **Claims 16, 17, 19-21,** and **23** are rejected under 35 U.S.C. 103(a) as being unpatentable over Ogata in view of Furuki (US 6,268,671).

As to **claim 16**, Ogata teaches an apparatus [fig. 1], comprising:

a housing manipulatable by a user;

an actuator [fig. 20] coupled to the housing and including an eccentric mass ("*rotor 111*") coupled to a rotatable shaft ("*drive shaft 109*") of the actuator defining an axis of rotation; and

a circuit (a combination of "*CPU + RAM + ROM*", "*PIO*", AND "*SIO*") [fig. 25] [col. 14 lines 1-6] coupled to the actuator, the circuit configured to produce a control signal such that, when the control signal is received by the actuator, the actuator produces a force effect having a magnitude and a frequency by rotating the mass about the axis of rotation in a first direction [col. 16 lines 24-30];

an obstacle member ("*elastic sheet 125*") coupled to the actuator, wherein the obstacle member is a spring member including a compliance portion configured to increase energy in the movement of the mass in a second direction opposite to the first direction (note that as the "*vibration motor 101*" is brought into intimate contact with the "*peripheral wall 98*", the "*elastic sheet 125*" is brought into the contact with the "*peripheral wall 98*" and the "*elastic sheet 125*" receives impact-force in the opposite direction of the movement of the "*vibration motor 101*", and thus the elastic energy on the "*elastic sheet 125*" increases).

Ogata inherently teaches the magnitude of the vibration being independent of the frequency of the vibration since magnitude and frequency are two distinct characteristics of the vibration.

Ogata does not expressly teach the magnitude of the vibration being based on a duty cycle of the control signal.

However, Furuki [figs. 8 and 9] teaches an apparatus comprising an actuator producing a force effect having a magnitude and a frequency, wherein the magnitude of the vibration is based on a duty cycle of a control signal controlling the actuator [fig. 6 lines 1-6].

It would have been obvious to one of ordinary skill in the art at the time of the invention to apply Furuki's idea of controlling magnitude of the vibration by changing the duty ratio of the control signal, to the apparatus of Ogata, in order to allow the apparatus of Ogata to provide various modes of vibrations [col. 6 lines 5-6].

As to **claim 17**, Ogata teaches the circuit including a local microprocessor ("*CPU + RAM + ROM*") [col. 16 lines 11-13] configured to receive from a host microprocessor (the processor

implemented in the "*main body portion 131*") information associated with an application, the control signal being produced based on the information associated with the application, the local microprocessor configured to output the control signal ("*motor driving command signal*") to the actuator [col. 16 lines 11-24].

As to **claim 19**, Ogata [fig. 1] teaches the housing including a game pad controller wherein the circuit is configured to receive information from a host microprocessor (the processor implemented in the "*main body portion 131*"), the control signal being produced based on the information, the local microprocessor configured to determine when the force effect is to be output based on an event occurring within a graphical environment associated with the host microprocessor [col. 16 lines 11-30].

As to **claim 20**, all of the claim limitations have already been discussed with respect to the rejection of claim 19 except for the housing including a game pad controller having a joystick.

Ogata teaches the housing including the game pad controller [fig. 1] having a joystick ("*rotation operator 16*") having two degrees of freedom, the game pad controller configured to provide input to a host computer in response to a user manipulation.

As to **claim 21**, Ogata teaches the actuator configured to rotate a mass associated with that actuator to collectively produce the force, as discussed with respect to the rejection of claim 16.

Ogata does not expressly teach a plurality of actuators.

However, the courts have held that a mere duplication of the components of the device is generally recognized as being within the level of ordinary skill in the art. *St. Regis Paper Co. v. Bemis Co. Inc. 193 USPQ 8, 11 (7TH Cir. 1977).*

Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to modify the apparatus of Ogata as modified by Furuki to include a plurality of actuators instead of an actuator, in order to provide more effective haptic feedback throughout the plurality of actuators.

As to **claim 23**, Ogata teaches that the obstacle member ("*elastic sheet 125*") [fig. 22] defines an end portion of a range of motion of the mass, wherein the mass moves in the second direction after the mass impacts the obstacle member direction (note that as the "*vibration motor 101*" is brought into intimate contact with the "*peripheral wall 98*", the "*elastic sheet 125*" is brought into the contact with the "*peripheral wall 98*" and the "*elastic sheet 125*" receives impact-force in the opposite direction of the movement of the "*vibration motor 101*"), the force effect being based on the control signal (duty ratio or amplitude or frequency) and at least in part by the mass impacting the obstacle member.

7. **Claim 18** is rejected under 35 U.S.C. 103(a) as being unpatentable over Ogata and Furuki as applied to claims 16, 17, 19-21, and 23 above, and further in view of Shalit (WO 97/31333).

Ogata teaches the apparatus described in claim 16.

Ogata as modified by Furuki does not teach the apparatus comprising a sensor configured to determine a position of the housing in one ore more degrees of freedom when the housing is manipulated by the user.

However, Shalit teaches an idea of using a haptic feedback device in a mouse [abstract] which comprises a sensor (the sensor detecting the movement of the trackball) [fig. 4] configured to determine a position of a housing of the mouse in one or more degrees of freedom when the housing is manipulated by the user.

It would have been obvious to one of ordinary skill in the art at the time of the invention to adopt Shalit's idea of implementing a haptic feedback device in a mouse and thus to implement the haptic feedback device of Ogata in a mouse, in order to provide a mouse which is capable of efficiently transmitting vibrations to the device-user while reducing the size of the mouse [Ogata: col. 2 lines 15-18].

8. **Claim 22** is rejected under 35 U.S.C. 103(a) as being unpatentable over Ogata and Furuki as applied to claims 16, 17, 19-21, and 23 above, and further in view of Takeda (US 6,022,274).

Ogata teaches the actuator being configured to receive power through a cable ("152") connecting the circuit to a host computer [fig. 25].

Ogata as modified by Furuki does not expressly teach the actuator being configured to receive power over an interface bus connecting the circuit to a host microprocessor.

However, Takeda [fig. 2] teaches an idea of using a serial I/O bus for connecting a game controller to a game console [col. 5 lines 45-50].

It would have been obvious to one of ordinary skill in the art at the time of the invention to modify the device of Ogata to use a serial I/O interface bus for connecting the circuit of the game controller/actuator to a microprocessor included in the game console, as taught by Takeda, in order to provide a faster bidirectional data transmission path.

Allowable Subject Matter

9. **Claims 1, 3, 5-15,** and **32** are allowed.

Conclusion

10. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Seokyun Moon whose telephone number is (571) 272-5552. The examiner can normally be reached on Mon - Fri (8:30 a.m. - 5:00 p.m.).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Sumati Lefkowitz can be reached on (572) 272-3638. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

July 06, 2007

- s.m.

SUMATI LEFKOWITZ
SUPERVISORY PATENT EXAMINER